AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 64

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0001	03-Dec-2001	W13G86-1290-0552	

6. ISSUED BY CODE DACW33
DEPT. OF THE ARMY
N E DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD MA 01742-2751

7. ADMINISTERED BY (If other than item 6) CODE
See Item 6

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip

CODE FACILITY CODE

X	9A. AMENDMENT OF SOLICITATION NO. DACW33-02-R-0002
X	9B. DATED (SEE ITEM 11) 13-Nov-2001
	10A. MOD. OF CONTRACT/ORDER NO.
	10B. DATED (SEE ITEM 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

X The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer X is extended, ☐ is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:
(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted;
or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE
RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN
REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter,
provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject where
(Amendment necessay to address questions recieved and to extend the receipt of proposal date.)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 03-Dec-2001

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

Changes in Solicitation/Contract/Order Form

The required response date/time has changed from 13-Dec-2001 16:30 to 03-Jan-2002 16:30

Responses to questions received:

1. Has a project management plan or 905(b) report been prepared for the Merrimack River Watershed project?

Response: A project management plan (PMP) has not been prepared. However information that will be part of the potential future PMP is included in the Draft Project Study Plan included as Attachment 1 Appendix J. of solicitation.

The 905(b) report is being written by the Corps project manager and is not available at this time.

2. On page 37 of solicitation there is mention of Bibliography of available reports. We would like copy of bibliography.

Response: The requested Bibliography has been added to Appendix J of the solicitation. The Corps staff compiled this bibliography. We do not have copies of all reports listed.

3. Is proposal submittal in pdf format acceptable?

Yes

4. What are Small Business requirements?

The minimum goals for subcontracting are as follows:
Small Business 61.4%
Small Disadvantaged Business 9.1%
Woman Owned Small Business 5%
Service Disabled Veteran Owen Small Business 3%

5. Question on format on wage rates.

Response: It would be easier for proposal comparison purposes if all proposal used the wage rate format sheets provided in the solicitation. It is okay to add additional job titles and to leave blank those your firm does not feel applicable.

6. Section L page 109; question regarding volume format and what is to be included in each volume.

Response: This format has been changed. The following format is to be used:

Vol. 1 Include information for all evaluation criteria provided in Section M except items f & j.

Vol. 2 Sample project (Excluding cost)

Vol. 3 Evaluation Critera f & j

Vol. 3 Cost (including Section J, attachment 5)

7. Section J page 45, the Phase 1 study schedule is missing.

Response: This has been added along with the cost table that was also missing.

8. We assume the words Task 25, Task 26, Task 27, Task 28 and Task 29 are superfluous and all the relevant text is included.

Yes these task numbers (25,26,27,28,29) are superfluous. Appears to be an error in conversion from word to pdf format. All the relevant information is included in that sample task order.

9. Section J page 98: A 50. 80 100 percent report is required; when at top of next page only a draft and final report are required.

Response: In the sample task order (Noname river watershed, the 50,80, 100 percent submittals should be changed to read the contractor will be required to provide a draft and final report submittals for review and approval by the local sponsors, regulatory agencies, and other stakeholders in the watershed and the Corps.

10. We would like to come to your office to review any relevant reports that might be in your possession.

Response: All reports are public record and are available at various state and non-profit agencies, including Merrimack River Watershed Counsel, 56 Island Street, Lawrence, MA and the New England Interstate Water Pollution Control Commission in Lowell, MA.

11. Requested copy of bibliography mentioned on page 37 and information on past water quality sampling efforts.

Response: The requested Bibliography and requested copy of the draft summary of water quality sampling efforts on river has been added to Appendix J of the solicitation as attachment 7. The Corps staff compiled this information and there may be other sources not included in this list.

12. Asked for Figure 1 basin map and Figure 2 bar chart schedule.

Response: We have added the Figure 1 Basin map as attachment 8. We have also added the bar chart and cost table to Appendix J attachment 1.

13. Question on cost proposal Appendix J attachment 5

Please see attachment 5, the entire set up has be changed

14. Section C, Paragraph 6.9, has been deleted in it's entirety

15. Are volume 4 rates to be DCAA audited rates?

    No

16. Are rates for subcontractors to be in separate table or combined with prime wage rate table? If combined how should overhead and fee be assessed?

    Please propose this as you would normally do business.

17. Should separate Reps and Certs be provided for each sub?

    No.

18. Is there a limit on number of projects to be listed in company experience?

    No, the limit only applies to evaluation criteria f.

19. Does the limit apply to subs?

    No

20. Is there a page limit on the proposal?

    No.

21. Should pages be numbered in consecutive order?

    Yes, per volume.

22. Does 0.75-inch margin apply to headers and footers or general text only?

    Yes, Graphics can be made to fit the page

23. Is there a deadline on questions?

    No.

LIST OF ATTACHMENTS

1. Merrimack River Assessment Study, Project Study Plan Phase I sated September 26, 2001
2. Draft Feasibility Cost Share Agreement (FCSA)
3. Merrimack CSO Coalition Memorandum of Understanding
4. Agreement Between the Merrimack CSO Coalition and the Merrimack River watershed Council
5. Wage Rate Tables/Pricing info.
6. Sample Task Order – Noname River Watershed
7. Bibliography - Water Quality Literature for the Merrimack River Watershed

APPENDIX J- ATTACHMENT 1

DRAFT MERRIMACK RIVER ASSESSMENT STUDY
PROJECT STUDY PLAN -PHASE I
September 26, 2001

INTRODUCTION

The Merrimack River is formed by the confluence of the Pemigewasset and Winnipesaukee Rivers at Franklin, New Hampshire and discharges to the Atlantic Ocean near Newburyport, Massachusetts. The Merrimack River watershed has a total drainage area of 5,010 square miles with about three-quarters of the watershed in New Hampshire and one-quarter in Massachusetts. The main stem is about 115 miles in length with about 73 miles in New Hampshire and 42 in Massachusetts. The lower 22 miles of the river are tidal. (Figure 1)

Over the past several decades significant improvements have been made to the overall water quality of the Merrimack River due to Federal, state, local community, and private investment in water pollution control facilities. However, there are remaining water quality, water quantity, fish and wildlife habitat, and flooding concerns.

THE CSO COALITION[1]

The cities of Lowell and Haverhill, Massachusetts and Nashua and Manchester, New Hampshire, and the Greater Lawrence Sanitary District, Massachusetts are each currently working to develop and implement long-term combined sewer overflow (CSO) control plans in compliance with the Federal Clean Water Act. Collectively, potential required CSO related improvements might cost as much as one billion dollars over the next 20 years. It is unclear that beneficial uses will be achieved even with CSO expenditures of this magnitude. The communities are concerned that decisions regarding potential CSO mitigation are being mandated by state and Federal regulatory agencies without a clear understanding of all pollution sources to the river, the existing conditions in the river, and the benefits of the required mitigation. The communities believe it is important that decisions be based on good data and a scientific and engineering understanding of the river and watershed. Once this information is developed it can be used to guide decisions regarding CSO mitigation implementation.

To conduct this needed river assessment; the communities have formed an inter-municipal partnership to carry out the study. The Federal government through the US Army Corps of Engineers water resources assessment authority is providing financial and technical assistance.

STUDY AUTHORIZATION

The Corps involvement in this study is authorized by Section 729 of WRDA of 1986 entitled “Study of Water Resources Needs of River Basins and Regions” as amended by Section 202 of WRDA 2000. In addition, directed funding for this effort was provided in the fiscal year 2000 Energy and Water Development Appropriation Bill.

STUDY PURPOSE AND SCOPE

The purpose of this study is to develop a watershed management plan that will guide investments to achieve conditions that support feasible beneficial uses. This will be

[1] The communities concepts for initiating this study are detailed in the paper entitled "Utilizing A Watershed Management Approach in Developing Combined Sewer Overflow Control Plans in the Merrimack River Watershed", dated September 1999.

accomplished by conducting a water resources and ecosystem restoration investigation of the Merrimack River. The study will be used to answer the questions:

- What are the existing and potential future feasible beneficial uses of the river?
- What are the pollutant sources that may impact these uses?
- What is the relative contribution of pollutants from various sources?
- What project(s) will provide the most significant return on investment?
- Which projects have the highest priority?

The study will be conducted in several phases. Phase I efforts will be aimed at identifying the current and potential future uses of the river, assessing the existing water quality conditions, identifying and quantifying pollutant loads to the river, developing model(s) to evaluate the effects of all existing pollutant loads including non-point sources, evaluating various CSO and non-CSO abatement strategies, and completing an initial inventory of potential ecosystem restoration projects in the watershed. Phase II efforts will be determined following the results of Phase I and undertaken based on availability of non-federal and federal funding. At this time it is anticipated that Phase II efforts may focus on in-stream flow issues, possible testing for non-standard water quality parameters, more detailed analysis of abatement alternatives, and providing for preliminary assessment of ecosystem restoration projects identified in Phase I.

The study will include an inventory of current and potential future uses, determination of existing water quality conditions (dry and wet weather), analysis of river water quality using models to evaluate benefits of alternative abatement strategies, determination of relative contribution of pollution from varying sources, and an evaluation of the benefits of alternative abatement plans. Agencies and organizations involved in water pollution control activities and ecosystem restoration along the Merrimack can use information generated by the study to prioritize projects based on expected benefits.

Specifically the scope will include data and analysis needed to determine causes of water quality degradation in the Merrimack River and to assess the impact of CSO and other point and non-point contributions to the river. The scope includes development of data that may be useful to state and Federal agencies to support Total Maximum Daily Load (TMDL) development.

STUDY AREA

The focus of the assessment study will be the main stem river from the Hookset Falls Dam in Hookset, New Hampshire (just north of Manchester) to the river estuary in Newburyport and Salisbury, Massachusetts, a distance of about 80 river miles. Significant tributaries and their watershed areas may be considered based on the degree that they impact water quality and flows along the main stem. In addition selected sub-watersheds may be investigated for ecosystem restoration opportunities.

STATEMENT OF ISSUES

There are many issues related to the use of the Merrimack River and its water. The following issues are likely to important to this study.

Water Quality.

Historically the water quality in the main stem Merrimack River was degraded due to industrial and municipal wastewater discharges. However since the implementation of the water pollution abatement facilities during the last 50 years the water quality of the river has improved dramatically.

However, remaining concerns regarding the presence of indicator organisms and localized high nutrient concentration have led regulators to list sections of the river under Section 303(d) of the Federal Clean Water Act as non-compliant with the Massachusetts and New Hampshire Water quality standards. Concerns in the Merrimack River are primarily indicator organisms including fecal coliforms and *E. coli*. Levels of coliforms in the river that exceed established water quality standards are indicators of the possible presence of pathogens.

River Low Flows. Concerns have been raised that future water supply withdrawals, cooling water, and hydropower needs may affect flows in the river such that flow requirements for water quality, fish and wildlife habitat, recreational use, and wastewater discharges may be impaired.

Water Supply. The Merrimack River main stem serves as a surface water supply for communities in Massachusetts and New Hampshire. In addition, there are several commercial and industrial users that withdraw water from the river. Communities within the watershed that do not get their water directly from the river rely on the tributaries and groundwater for water supply. As communities grow and water demand potentially increases there are concerns regarding the cumulative effect of water withdrawals from the Merrimack River and the watershed.

Hydropower. There are three hydropower stations on the mainstem Merrimack River within the study area at Lowell, Lawrence, and Manchester. There are two other stations upstream of Manchester. Hydropower operations are generally run-of-river. However, water is diverted from some reaches of the mainstem to generate power, and flow manipulations for generation purposes at the facilities in New Hampshire may cause daily flows to fluctuate downstream of the facilities.

Recreational Use of River. Recreation use of the river includes swimming, fishing, boating, and passive enjoyment of the greenbelt and vista provided by the waterway. Recreation areas along the river include state, federal, local community and non-profit parks and boating facilities. Current water quality concerns in the river require monitoring and frequent closure of the swimming area at Lowell.

Flooding. Flooding issues along the Merrimack mainstem are minimized due to the Corps flood control dams located in the upper watershed (5 Corps dams). Some tributaries without flood control projects still experience chronic flooding problems related to increasing development. These include the Spickett River and Concord River near Lowell and the Nashua and Shawsheen Rivers.

Fish and Wildlife Habitat. The Merrimack River watershed from Manchester to the estuary is developed, especially around the urban centers. However, there are still intact natural

land and riparian corridors. The mainstem river, tributaries, and the estuary provide important habitat areas for fish and wildlife, but there are likely many areas in the watershed that can benefit from ecosystem restoration projects. For example, efforts are underway by the USFWS to restore anadromous fish to the Merrimack River. Target species include Atlantic salmon, river herring (alewives and blueblacks), and American shad. The USFWS supports investigating opportunities to provide herring passage (fishways or dam removal projects) on tributaries to the Merrimack.

Commercial and Recreational Shellfishing

The Merrimack River estuary is an important marine resource and provides habitat for various species of soft-shell clams. This is a potential shellfish harvesting area that is currently limited by elevated bacterial levels. There is significant local interest to improve water quality conditions in the river to increase the feasibility of opening shellfish beds to harvesting.

Fish and Wildlife Contamination Issues.

Due to the industrialized and urbanized areas in the watershed, fish and wildlife in the area may carry contaminants in their tissues commonly found in industrialized urban river systems. Potential pollutants of concern to fish and wildlife may include PCBs and mercury. The USFWS has conducted some preliminary fish tissue analysis (whole body sampling) of fish taken from selected reaches along the river. Results from a 1998 survey confirmed results from an earlier study in 1991 that showed somewhat elevated levels for PCBs in whole body samples in some areas.

Mercury is also a pollutant of concern in the Merrimack River watershed. Mercury contamination is thought to be the result of airborne mercury from incinerators throughout the region. Massachusetts Department of Public Health, Bureau of Environmental Health Assessment has issued a health advisory relative to eating fish taken from the river between Tyngsboro and Methuen, Massachusetts.

PAST WATERSHED PLANNING EFFORTS

A significant collaborative planning program for the watershed called the “The Merrimack River Watershed Initiative" (MRI) began in 1988 and was completed in 1997. This program involved diverse stakeholders and examined the watershed as a whole. The overall goal of the MRI was to develop a sufficient understanding of the river to allow the identification of the next steps towards restoring and maintaining the physical, chemical, and biological integrity of the river and its watershed to meet existing and future multiple uses and to protect its natural resources. Findings suggested that wet-weather water quality issues were priority areas for further investigation.

STUDY MANAGEMENT STRUCTURE

To meet the needs of the study and the Corps regulations the following management structure is proposed.

1. To provide for consistent and effective communication, the non-Federal Sponsor and the Corps shall appoint senior representatives to an Executive Committee as described in the Feasibility Cost Share Agreement.

2. The Executive Committee shall appoint representatives to serve on a Study Management Team. The Study Management Team (with members from the Corps and the CSO coalition) will be responsible for the day to day operation of the study.

3. It is envisioned that the assessment analysis will be contracted out through the Corps Procurement Process. This includes s a competitive proposal process that is overseen by the Corps staff. The Corps will handle the contractor selection and contract administration.

4. The Corps will establish an Independent Technical Review team with Corps staff to review contractor deliverables. The study management team will also be provided with copies of deliverables for review and comment.

5. Professional stakeholders (regulatory, planning, and resource agencies) will be included in the study process through appropriate meeting and coordination efforts.

6. The public will be kept informed of the study progress through a public outreach effort.

PHASE I STUDY TASKS

Below is a general description of the Tasks to be included in Phase I of the assessment study. During the course of the study the specifics of described Study Tasks will be adjusted and modified to stay within the limits of the Federal and non-Federal dollars available to conduct the study.

Task 1. Evaluation of Existing Conditions

Describe existing conditions in the river based on a review of available reports. Include discussions of water quality, water quantity, dams and impoundments, sediment quality, and biological resources and habitat including phytoplankton, macroinvertebrates, fisheries (anadromous and resident fish population), shellfish, and wetlands (freshwater and tidal). Major tributaries, but not lakes and ponds, will be included in the evaluation. The report should include an identification of site-specific known or suspected pollutant sources based on available data, and detail the pollutants and quantities to the extent known.

There are many existing reports and data sources that can be utilized. The Corps has recently prepared a bibliography of available reports that include the Merrimack River Initiative reports prepared in the 1990's. In addition, a bibliography and summary information is available from the MRWC's Merrimack Watershed 2000 Assessment Reports. USGS has also prepared

an Inventory of Selected Freshwater Ecology studies from the New England Coastal Basins (Open-file Report 99-467). Massachusetts Department of Environmental Protection (MADEP) is expected to issue their summary 305(b) report on the Merrimack River Water Quality this fall. Data collection programs are summarized and a bibliography is included as Appendix A.

Task 2. Inventory Current and Potential Future Uses

Building on work done by others (Merrimack River Watershed Initiative, the MRWC and the Regional Planning Agencies), compile a site specific list and information on current and potential future public and private uses of the river. Determine which uses the river currently supports and which the river could feasibly support in the future. Obtain input from regional planning agencies and others. River uses include, but are not limited to, recreation (primary-swimming and secondary-boating), drinking water supply, and aquatic habitat for fish and wildlife, fish and shellfish consumption, hydropower, and other industrial uses. Develop information showing existing and future use locations, describing type of activity, and identifying water quality/quantity criteria required for these uses to occur. Coordinate this effort with GIS development task.

Task 3. Information on Sources of Pollutants to the River

Combined Sewer Overflows. Each of the 5 facilities with CSO discharges to the river is in the process of evaluating their systems and preparing long-term control plans. In addition SWWM models have been developed for the CSO's. Information on CSO locations, drainage areas, and discharge quantity, frequency, and quality information should be available from these reports and through the existing models created using Storm Water Management Model (SWWM) computer modeling software.

Storm Drains. The knowledge of layouts and locations of storm drain outfalls varies with different communities. This study will initially contact communities to provide an identification of the number, sizes, drainage areas, and locations for storm drain outfalls along the mainstem river. There are 16 communities in Massachusetts
and 6 in New Hampshire that will be considered; these are listed below. Where communities do not have the needed information, the study will conduct a field inspection to identify major storm drain locations. Locations will be recorded with GPS and marked on a USGS quad sheet of the area and this data will be added to the GIS for the study. Currently we are assuming that the effects of storm drains less than 36 inches in diameter can be modeled using data on land use; however, the final criterion in pipe size or drainage area will depend on the expected sensitivity of the river to these discharges.

Storm drain drainage areas will be estimated based on USGS quad sheets and any information provided by communities. Field verification of the drainage area is not part of this study. Communities where storm drains will be considered are:

Massachusetts	New Hampshire
1. Salisbury	1. Hudson
2. Newburyport	2. Nashua
3. Amesbury	3. Bedford
4. West Newbury	4. Litchfield

5. Merrimack
6. Groveland
7. Haverhill
8. Methuen
9. North Andover
10. Lawrence
11. Andover
12. Dracut
13. Tewksbury
14. Lowell
15. Chelmsford
16. Tyngsboro

5. Merrimack
6. Manchester

Municipal Wastewater Treatment Plants. Information will be collected from the communities on the quality and quantity of WWTP discharges to the river for average daily flow and storm conditions. Communities will also be requested to provide any information they have on expected future changes in water quality or quantity.

Information on Industrial Point Source Discharges. Information on the quality and quantity of industrial point source will be collected from the states and EPA.

Others Sources of Pollutants. Collect information on sediments, air deposition, groundwater plumes from landfills, erosion along stream banks, and areas with failing septic systems, pump station overflows, or illicit wastewater discharges to stormdrains.

Task 4. Develop Modeling Methodology

Water Quality Model Selection - The model(s) selected to be developed will need to be able to quantify the impacts of non-point and point pollution sources on parameters studied. Ability to simulate event specific loading of bacteria and analysis of the transport of this pollutant in the river is critical to the study effort. The models will need to be able to predict the effects of reduced bacteria at a specific discharge and at downstream stations.

The model(s) selected will need to able to simulate changes in flows, pollutant loading and river water quality during storm events. Also important is graphical display of results in a manner that can be easily understood.

As it is unlikely that one river model can be developed from Manchester to the estuary to answer questions at the level of detail of a specific discharge, it will likely be necessary to develop a more simplified overall model of the river, and supplement it with local models to determine the effects around specific CSO's or storm drain discharges. To the extent practical, horizontal differences across the river channel relative to pollutant plumes need to be considered in development of localized models.

Existing CSO models - The communities have developed SWWM models for the CSO's discharging to the main stem Merrimack. It is envisioned that these models will be used to generate estimates of flows and pollutant loading for the CSO's.

Tributaries. Determine to what extent tributaries may need to be modeled to adequately represent pollutant loads.

Upstream Boundary Conditions. Determine how upstream boundary conditions will be determined.

Stormwater and non-point source pollutant loading. Develop a method to model loading from stormwater drains and other non-point sources. This requires estimates of discharge flow and quality for different season and storm conditions. It is envisioned that flows may be estimated based on drainage areas of the storm drains. Quality will be estimated based on stormwater quality data collected in other studies such as the Charles River and NERP with some sampling of Merrimack River storm drains to verify assumptions.

Task 5. Data Management Program

Develop methodology and provide data management for study. Method selected should be compatible with GIS.

Task 6. Develop Screening Level Model

Identify, collect, and compile data needed to develop selected models. Review existing data to determine what is available and useable. Set up an initial screening level model(s) using available data. Use this exercise to become familiar with the existing data and watershed characteristics. This effort will help to identify data gaps and guide the design of the data collection efforts.

Data requirements may include but not be limited to the following:

River cross-section data (river geometry)
Flow records
Water surface elevation data
Water quality data
Meteorological data
Watershed Data including topography and land use

Task 7. Hydrology/Hydraulics Data

Once the modeling methodology has been established, determine the hydrology and hydraulic data that will be required. Collect and develop data needed for modeling efforts.

USGS maintains several flow monitoring stations throughout the watershed. Relevant gages are the Merrimack River in Manchester, NH, the Soucook River in Concord, NH, Merrimack River in Lowell, Ma, and the Concord River in Lowell, MA. Hydropower companies will also be contacted to see what information they may have as to monitoring and existing studies of flows in the river. Also identify minimum flow releases required at main stem hydropower plants and describe how the hydropower plant operations affect the mainstem river flows.

Time of Travel Studies. Determine the need for time of travel studies to support the assessment. If needed perform studies to determine the time of travel for selected river sections under various flow conditions.

Topographic Surveys. Review existing cross-section data for the mainstem river and identify where new data are required to set up a river model. Conduct cross-section surveys to obtain new data.

Task 8. Design Detailed Water Quality Sampling Program

Design a water quality sampling program for the river and discharges to the river for both dry and wet weather conditions and to establish boundary conditions for modeling efforts. Seasonal differences are to be considered in recommending sampling efforts. Determine whether additional river flow monitoring stations will be needed during sampling periods. Determine methods for monitoring flows from point sources such as CSO's and storm drains.

WWTP permits may only require seasonal disinfecting April to October which would affect sampling during winter months. WWTP permits requirements will be considered in establishing the sampling program.

Water Quality Parameters. The main focus of the study will be on indicator organisms in the main stem Merrimack River. As measurement of dissolved oxygen, temperature, pH, and salinity can be easily be made in the field, these parameters will likely be included. As resources allow, the Phase I study may include nutrients, metals testing, and macroinvertebrate analysis.

Indicator organisms. Enumeration of fecal coliform, *Escherichia coli* (*E. coli*), and *Enterococcus* will be used as indicators of pathogens in discharges and the river. It is planned that both *E. coli* and fecal coliform will be included as well as Enterococcus in the estuary area.

New Hampshire uses *Escherichia coli* as the water quality standard and Massachusetts uses fecal coliform. In addition EPA recommends *Enterococcus* as the best indicator for marine waters such as the lower Merrimack Basin. Although the National Shellfish Sanitation Program requires the use of fecal coliform to classify shellfish growing areas, Massachusetts Division of Marine Fisheries often enumerates fecal coliform and *E. coli* in their water samples to support their sanitary surveys.

Measurement of bacteria will provide an understanding of the relative contribution of pathogen indicators from the various sources and the ability to comply with established standards.

Nutrient Testing. Testing for various forms of nitrogen and phosphorus will be considered during the development of the water quality sampling plan. Including these analyses in the sampling effort will depend on the cost. Nitrogen and phosphorus are the primary nutrients that are most commonly found to be limiting to algae or aquatic plant growth. Excess nutrients can result in eutrophic conditions in a waterbody.

Metals Testing. Testing for metals in water will be considered during the development of the water quality sampling plan. Including these analyses in the sampling effort will depend on the cost. Lead is the main metal that has been identified as a possible cause of non-attainment of water quality goals. Metals testing may consider arsenic, cadmium, copper, chromium, lead, mercury, silver, and zinc but the final plan may add or delete metals from this list. Total metals analyses will be considered as well as dissolved metals.

Dissolved Oxygen (DO) Testing. DO testing will be performed in the field using instruments that simultaneously measure dissolved oxygen, temperature, pH, conductivity, and salinity. A limited number of temperature/DO depth profiles will be performed in impoundments behind main stem dams to assess the degree of stratification that occurs. BOD and COD analyses may be considered to allow DO to be modeled.

Salinity Measurements. Consider salinity sampling between the estuary and the Lawrence Dam to determine the extent of tidal influence.

Macroinvertebrate analysis. The study will consider the use of biological sampling such as macroinvertebrate analysis. Sampling of macroinvertebrate populations in the river would provide an indicator of habitat quality for an area and allow a comparison of current habitat conditions for different reaches of the river.

Bio-assays. Bioassays are used to assess acute or chronic effects of discharges on ambient water quality and sediment conditions. The study will consider utilizing bioassay techniques.

Dry-Weather Sampling. The study will develop a sampling plan for dry-weather conditions. Dry-weather sampling will include selected river stations, tributaries where they join the mainstem river, WWTP's, and any other significant inputs that might affect water quality. To the extent possible, dry weather sampling will be coordinated with MADMF sanitary surveys of shellfish growing areas.

Dry-weather sampling will be conducted during periods of outgoing tide in the tidal portions of the river. "Dry-weather" conditions will be assumed as at least 3 consecutive days with no more than 0.1 inches of rain and less than an inch of rain in the previous week at three selected stations in the basin. However, this definition may be changed if data or experience shows that some other condition may better define "dry-weather".

Wet Weather Sampling - The study will develop a sampling plan for wet-weather conditions. Wet-weather sampling will include selected river stations, tributaries where they join the main stem and WWTP's, CSO's, and storm drain discharges.

The study will design the sampling to include the effects of plumes where the river is not completely mixed; this will require sampling across the width of the river at some locations.

The sampling design will also consider the variation in quality in storm drain and CSO discharges due to effects such as the "first flush," and require samples to be collected over time during the storm at both the discharge locations and the river stations.

The sampling design will consider travel times in the river, and this will also require samples to be collected over time at selected river stations. Travel times in the tidal portions of the river will depend on the tidal conditions at the time of sampling.

"Wet-weather" conditions are tentatively defined as a storm producing at least 0.5 inch of rain in a 24-hour period. This rainfall criterion may be modified after a review of CSO activation versus rainfall depth. Also the inherent difficulties with capturing a wet weather event may result in a specific sampling event not meeting the criteria.

The magnitude of the wet-weather sampling effort necessary to give good results may require the use of automatic samplers, but it will also require cooperation and manpower from as many federal, state, city and other agencies and interested parties as possible.

Task 9. Quality Assurance Project Plan

In conjunction with EPA, MADEP, and NHDES, develop Quality Assurance Project Plan (QAPP) for sampling efforts.

Task 10. Water Quality Sampling and Flow Monitoring

The assessment will include collection of new data on river water quality and discharges, and an accompanying flow monitoring program. The actual sampling program will be based on recommendations made in earlier tasks.

Task 11. Develop Water Quality Models

Collect any additional data needed to set up models. Set up and run models. Calibrate and verify models for existing conditions.

Task 12. River Analysis Using Developed Models

Use the models developed to assess the relative contribution of pollutants from various sources and how the river might respond to decreases in loading from the various sources. Determine to what extent hydropower dams or other flow modifications affect the river water quality. Model results will be reviewed to determine if there are indications of other (un-modeled) sources of pollutants.

Task 13. Plan Formulation

Develop a list of possible structural and non-structural control strategies such as separation or treatment of CSO's, elimination of pump station overflows, reduction in illicit connections to storm drains, and implementation of stormwater BMP's. Formulation of CSO abatement alternatives will rely on information available from the communities and no new information will be developed here. Formulation of non-point source run-off and storm water management BMP's will be based on the technical literature review.

Task 14. Alternatives Analysis

Conceptual alternatives developed in the previous task will be analyzed using the water quality models to identify the expected water quality and ecosystem improvements associated with each alternative. Planning level costs for the alternatives will be estimated and a cost to benefit analysis provided.

Task 15. Inventory Ecosystem Restoration Opportunities

Review existing data, coordinate with watershed stakeholders, and conduct site visits to prepare a list of feasible ecosystem restoration projects in the river and selected watershed areas. Projects to be considered include dam removal or constructing fish passage on tributaries for anadromous fish restoration efforts, in-stream fisheries habitat restoration, establishment of riparian buffer strips, establishment of storm water management wetlands or ponds, erosion control projects, and wetland restoration projects along the main stem river. Lake and pond restoration projects will not be included in the study. Provide a list of potential projects and brief description of each project.

Task 16. Geographic Information System (GIS)

In conjunction with Study Management Team develop a GIS work plan for the study. Determine if the GIS needs to be available on the WEB. A website host would need to be determined. Based on this work plan develop mapping, data architecture and database for study. The GIS mapping and database will be developed for ArcView. Likely themes will include existing coverages available from EPA, USGS, and New Hampshire and Massachusetts GIS offices, from the Merrimack River Watershed Council, and the regional planing agencies. New GIS themes will be created for appropriate collected data such as locations of existing and future river uses, storm drains, CSO's, areas served by septic systems, and water quality data and ecosystem restoration project location information. In addition GIS may be able to be integrated with the water quality modeling for the study and used as an analytical tool.

Task 17. Outreach Program

Develop and implement an outreach program for the assessment study. The plan may include coordination and meetings with professional stakeholders such as regulatory, planning and resource agencies, public meetings to present study findings, a newsletter, and information on the study posted to an available website. The Merrimack River Watershed Council will provide this effort as an in-kind service for the CSO coalition.

Task 18. Project Management

The Corps Project Manager will be responsible for overall study management, control, coordination and execution. The project manager will provide review and tracking of study progress, distribution and tracking of study funds, preparation and updating of schedule and financial documentation, performing Corps internal and upward reporting of study progress and expenditures and reporting the same to non-federal sponsor on a monthly basis. Organize and participate in Corps Internal Technical Review (ITR) of consultant products. Contracting efforts including preparing government estimates and task scope of works, developing and negotiating

task orders and cost change requests, awarding task orders and payment of contractor invoices. Coordination efforts include participation at and input to study team meetings, public meetings, and outreach activities.

MRWC will also provide Project Management efforts for the CSO Coalition as an in-kind service. This effort will include coordinating the operations of the coalition, organizing Study Management Team meetings and other appropriate meetings including preparing agendas, schedules, notices and meeting documentation, coordinating communication among any committees that are established for the study. The MRWC will collect and summarize comments from the Coalition and provide to the Corps. Coordination of the study with U.S. EPA, NHDES, and MADEP. MRWC efforts on behalf of the CSO Coalition will be coordinated with the Corps Project Manager.

Task 19. Report Preparation

Interim Reports. Interim Task Reports will be provided to the Study Management team and the Corps Internal Technical Review team for review. Comments will be provided to the Project Manager within 30 days in electronic format. The Corps Project Manager will review and compile comments. Comments will be responded to in writing and appropriate changes to reports will be made. Twenty copies of draft and final task reports will be prepared.

Draft Report. This task is to prepare and revise the Watershed Assessment Report. The report will consist of a main report, and supporting task reports. Prepare 50 copies of the draft report.

Review Draft Report. The Study Management Team and the ITR team will review and comment on the draft report. Comments will be provided to the Project Manager within 30 days. Upon completion of the final draft assessment, it will be submitted to HQUSACE for review and processing to the Assistant Secretary of the Army (Civil Works) and Congress as appropriate. Any potential Corps of Engineers projects identified for further study in the Assessment will be pursued through the normal authorization/budgeting process.

Final Report. Revise draft report based on review comments. Prepare 50 copies of the final report. In addition 5 locations available to the public will be selected and a full set of reports will be provided at each location.

Report Format. Reports and maps (including task reports) will be provided in both hard copy and digital format.

Task 20. Corps Independent Technical Review Team

An Independent Technical Review (ITR) team will be established that represents all technical elements providing significant input to the Study, as required by Corps policy. The ITR team will have the credentials and experience necessary to provide a comprehensive review

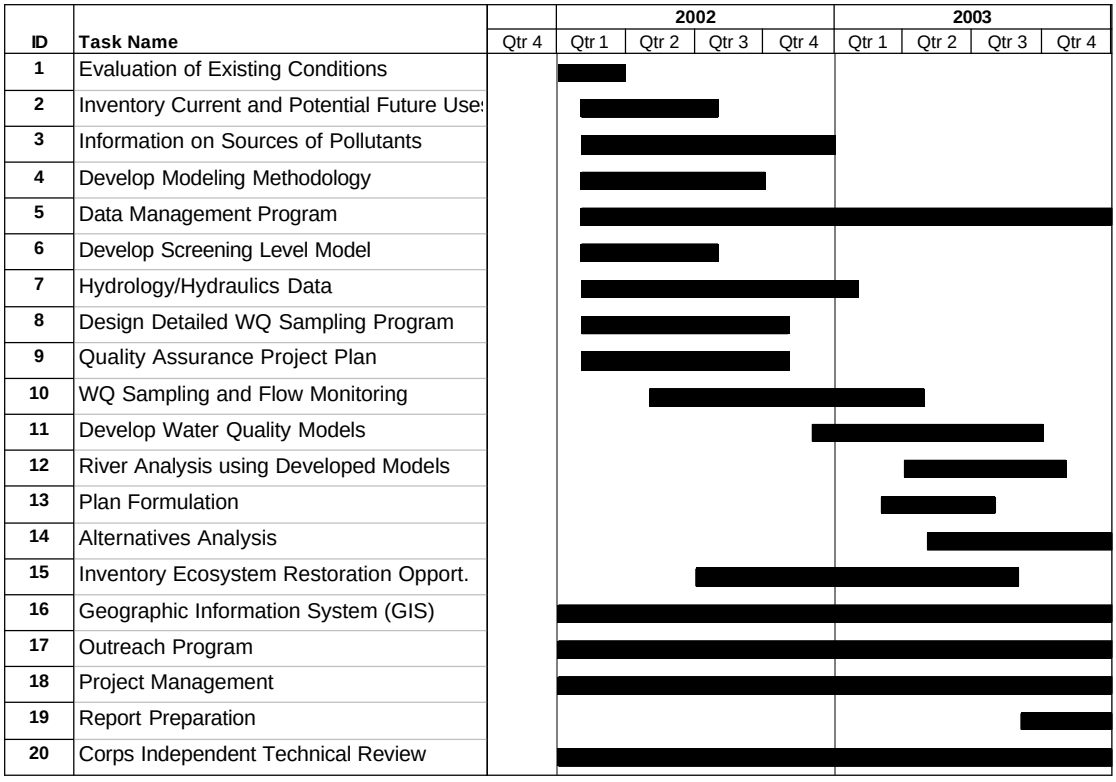
particularly as it relates to plan formulation, environmental, economic, engineering, and water quality and modeling efforts. The ITR team members will not have been involved in production of the technical products under review. Technical work performed, as in-kind services will be required to be included in the ITR certification process.

PHASE I STUDY SCHEDULE

Provided here is a general schedule of Corps upward reporting milestones required by Corps regulation to Corps North Atlantic Division (NAD) for a study of this type. The milestones presented below are the baseline schedule and meeting these milestones and projected expenditures for a federal fiscal year is the Corps overall measure as to the studies progress and accomplishments. At this time it is expected that the Phase I effort will take about two years to complete.

A general bar chart of Phase I study tasks is included below. Study start may be different than shown. This task schedule will be updated and reworked throughout the study to keep the study management team informed of study progress.

Milestone	Date	Action
P-7	August 2003	Formulation Meeting/Briefing with NAD



PHASE I STUDY COST ESTIMATE -DRAFT

Merrimack River Assessment Study, Phase I, September 27, 2001

Task No.	Task	Cost ($)	In-Kind Services ($)	Total Cost ($)
Task 1.	Evaluation of Existing Conditions	13,000		13,000
Task 2.	Inventory Current and Potential Future Uses	12,000		12,000
Task 3.	Information on Sources of Pollutants to the Riv	61,000		61,000
Task 4.	Develop Modeling Methodology	30,000		30,000
Task 5.	Data Management Program	23,000		23,000
Task 6.	Develop Screening Level Model	28,000		28,000
Task 7.	Hydrology/Hydraulics Data	72,000		72,000
Task 8.	Design Detailed Water Quality Sampling Progra	22,000		22,000
Task 9.	Quality Assurance Project Plan	18,000		18,000
Task 10.	Water Quality Sampling and Flow Monitoring	700,000		700,000
Task 11.	Develop Water Quality Models	320,000		320,000
Task 12.	River Analysis Using Developed Models	68,000		68,000
Task 13.	Plan Formulation	28,000		28,000
Task 14.	Alternatives Analysis	50,000		50,000
Task 15.	Inventory Ecosystem Restoration Opportunities	44,000		44,000
Task 16.	Geographic Information System (GIS)	45,000		45,000
Task 17.	Public Involvement/Outreach	-	50,000	50,000
Task 18.	Project Management	183,000	58,000	241,000
Task 19.	Report Preparation	50,000		50,000
Task 20.	Corps Independent Technical Review Team	75,000		75,000
	Contingencies	50,000		50,000
		1,892,000	108,000	2,000,000

Phase I Study Cost Distribution	($)
Federal Cash Contribution	1,000,000
Local Cash Contribution	892,000
In-kind Services	108,000
Total of Cash and In-kind Services	2,000,000

Appendix J - Attachment 2

DRAFT FEASIBILITY COST SHARE AGREEMENT (FCSA)
AGREEMENT
BETWEEN THE DEPARTMENT OF THE ARMY
AND
THE CITY OF LOWELL
FOR THE MERRIMACK RIVER COMPREHENSIVE
WATERSHED ASSESSMENT STUDY

THIS AGREEMENT is entered into this _____ day, of _____, 20_, by and between the Department of the Army (hereinafter the "Government"), represented by the District Engineer executing this Agreement, and the City of Lowell (hereinafter the "Sponsor"),

WITNESSETH, that

WHEREAS, the Congress (Senate and/or House Committees) has authorized the US Army Corps of Engineers to conduct a comprehensive study of the water resources needs of the Merrimack River Basin, Massachusetts and New Hampshire (PL-106-541, section 437), in the manner described in section 729 of the Water Resources Development Act of 1986, as amended by section 202 of the Water Resources Development Act of 2000 (PL 99-662, section 202); and

WHEREAS, the U.S. Army Corps of Engineers has conducted a reconnaissance study of the Merrimack River Basin pursuant to this authority, and has determined that further study in the nature of a "Feasibility Phase Study" (hereinafter the "Study") is required to fulfill the intent of the study authority and to assess the extent of the Federal interest in participating in a solution to the identified problem; and

WHEREAS, Section 105 of the Water Resources Development Act of 1986 (Public Law 99-662, as amended) specifies the cost sharing requirements applicable to the Study;

WHEREAS, the Sponsor has the authority and capability to furnish the cooperation hereinafter set forth and is willing to participate in study cost sharing and financing in accordance with the terms of this Agreement; and

WHEREAS, the Sponsor and the Government understand that entering into this Agreement in no way obligates either party to implement a project and that whether the Government supports a project authorization and budgets it for implementation depends upon, among other things, the outcome of the Study and whether the proposed solution is consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and with the budget priorities of the Administration;

NOW THEREFORE, the parties agree as follows:

ARTICLE I - DEFINITIONS

For the purposes of this Agreement:

A. The term "Study Costs" shall mean all disbursements by the Government pursuant to this Agreement, from Federal appropriations or from funds made available to the Government by the Sponsor, and all negotiated costs of work performed by the Sponsor pursuant to this Agreement. Study Costs shall include, but not be limited to: labor charges; direct costs; overhead expenses; supervision and administration costs; the costs of participation in Study Management and Coordination in accordance with Article IV of this Agreement; the costs of contracts with third parties, including termination or suspension charges; and any termination or suspension costs (ordinarily defined as those costs necessary to terminate ongoing contracts or obligations and to properly safeguard the work already accomplished) associated with this Agreement.

B. The term “estimated Study Costs” shall mean the estimated cost of performing the Study as of the effective date of this Agreement, as specified in Article III.A. of this Agreement.

C. The term “excess Study Costs” shall mean Study Costs that exceed the estimated Study Costs and that do not result from mutual agreement of the parties, a change in Federal law that increases the cost of the Study, or a change in the scope of the Study requested by the Sponsor.

D. The term "study period" shall mean the time period for conducting the Study, commencing with the release to the U.S. Army Corps of Engineers New England District of initial Federal feasibility funds following the execution of this Agreement and ending when the Assistant Secretary of the Army (Civil Works) submits the feasibility report to the Office of Management and Budget (OMB) for review for consistency with the policies and programs of the President.

E. The term "PSP" shall mean the Project Study Plan, which is attached to this Agreement and which shall not be considered binding on either party and is subject to change by the Government, in consultation with the Sponsor.

F. The term "negotiated costs" shall mean the costs of in-kind services to be provided by the Sponsor in accordance with the PSP.

G. The term "fiscal year" shall mean one fiscal year of the Government. The Government fiscal year begins on October 1 and ends on September 30.

ARTICLE II - OBLIGATIONS OF PARTIES

A. The Government, using funds and in-kind services provided by the Sponsor and funds appropriated by the Congress of the United States, shall expeditiously prosecute and complete the Study, in accordance with the provisions of this Agreement and Federal laws, regulations, and policies.

B. In accordance with this Article and Article III.A., III.B. and III.C. of this Agreement, the Sponsor shall contribute cash and in-kind services equal to fifty (50) percent of Study Costs other than excess Study Costs. The Sponsor may, consistent with applicable law and regulations, contribute up to 25 percent of Study Costs through the provision of in-kind services. The in-kind services to be provided by the Sponsor, the estimated negotiated costs for those services, and the estimated schedule under which those services are to be provided are specified in the PSP. Negotiated costs shall be subject to an audit by the Government to determine reasonableness, allocability, and allowability.

C. The Sponsor shall pay a fifty (50) percent share of excess Study Costs in accordance with article III.D. of this Agreement.

D. The Sponsor understands that the schedule of work may require the Sponsor to provide cash or in-kind services at a rate that may result in the Sponsor temporarily diverging from the obligations concerning cash and in-kind services specified in paragraph B. of this Article. Such temporary divergences shall be identified in the quarterly reports provided for in Article III.A. of this Agreement and shall not alter the obligations concerning costs and services specified in paragraph B. of this Article or the obligations concerning payment specified in Article III of this Agreement.

E. If, upon the award of any contract or the performance of any in-house work for the Study by the Government or the Sponsor, cumulative financial obligations of the Government and the Sponsor would result in excess Study Costs, the Government and the Sponsor agree to defer award of that and all subsequent contracts, and performance of that and all subsequent in-house work, for the Study until the Government and the Sponsor agree to proceed. Should the Government and the sponsor require time to arrive at a decision, the Agreement will be suspended in accordance with Article X., for a period of not to exceed six months. In the event the Government and the sponsor have not reached an agreement to proceed by the end of their 6 month period, the Agreement may be subject to termination in accordance with Article X.

F. No Federal funds may be used to meet the Sponsor's share of Study Costs unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized by statute.

G. The award and management of any contract with a third party in furtherance of this Agreement which obligates Federal appropriations shall be exclusively within the control of the Government. The award and management of any contract by the Sponsor with a third party in furtherance of this Agreement which obligates funds of the Sponsor and does not obligate Federal appropriations shall be exclusively within the control of the Sponsor, but shall be subject to applicable Federal laws and regulations.

ARTICLE III - METHOD OF PAYMENT

A. The Government shall maintain current records of contributions provided by the parties, current projections of Study Costs, current projections of each party's share of Study Costs, and current projections of the amount of Study Costs that will result in excess Study Costs. At least quarterly, the Government shall provide the Sponsor a report setting forth this information. As of the effective date of this Agreement, estimated Study Costs are $2,000,000 and the Sponsor's share of estimated Study Costs is $1,000,000. In order to meet the Sponsor's cash payment requirements for its share of estimated Study Costs, the Sponsor must provide a cash contribution currently estimated to be $892,000 . The dollar amounts set forth in this Article are based upon the Government's best estimates, which reflect the scope of the study described in the PSP, projected costs, price-level changes, and anticipated inflation. Such cost estimates are subject to adjustment by the Government and are not to be construed as the total financial responsibilities of the Government and the Sponsor.

B. The Sponsor shall provide its cash contribution required under Article II.B. of this Agreement in accordance with the following provisions:

1. No later than 30 calendar days prior to the scheduled date for the Government's issuance of the solicitation for the first contract for the Study or for the Government's anticipated first significant in-house expenditure for the Study, the Government shall notify the Sponsor in writing of the funds the Government determines to be required from the Sponsor to meet its share of Study Costs. No later than 15 calendar days thereafter, the Sponsor shall provide the
Government the full amount of the required funds by delivering a check payable to "FAO, USAED, New England District to the District Engineer.

2. The Government shall draw from the funds provided by the Sponsor such sums as the Government deems necessary to cover the Sponsor's share of contractual and in-house financial obligations attributable to the Study as they are incurred.

3. In the event the Government determines that the Sponsor must provide additional funds to meet its share of Study Costs, the Government shall so notify the Sponsor in writing. No later than 60 calendar days after receipt of such notice, the Sponsor shall provide the Government with a check for the full amount of the additional required funds.

C. Within ninety (90) days after the conclusion of the Study Period or termination of this Agreement, the Government shall conduct a final accounting of Study Costs, including disbursements by the Government of Federal funds, cash contributions by the Sponsor, the amount of any excess Study Costs, and credits for the negotiated costs of the Sponsor, and shall furnish the Sponsor with the results of this accounting. Within thirty (30) days thereafter, the Government, subject to the availability of funds, shall reimburse the Sponsor for the excess, if any, of cash contributions and credits given over its required share of Study Costs, other than excess Study Costs, or the Sponsor shall provide the Government any cash contributions required for the Sponsor to meet its required share of Study Costs other than excess Study Costs.

D. The Sponsor shall provide its cash contribution for excess Study Costs as required under Article II.C. of this Agreement by delivering a check payable to "FAO, USAED, New England District" to the District Engineer as follows:

1. After the project that is the subject of this Study has been authorized for construction, no later than the date on which a Project Cooperation Agreement is entered into for the project; or

2. In the event the project that is the subject of this Study is not authorized for construction by a date that is no later than 5 years of the date of the final report of the Chief of Engineers concerning the project, or by a date that is no later than 2 years after the date of the termination of the study, the Sponsor shall pay its share of excess costs on that date (5 years after the date of the Chief of Engineers or 2 year after the date of the termination of the study).

ARTICLE IV - STUDY MANAGEMENT AND COORDINATION

A. To provide for consistent and effective communication, the Sponsor and the Government shall appoint named senior representatives to an Executive Committee. Thereafter, the Executive Committee shall meet regularly until the end of the Study Period.

B. Until the end of the Study Period, the Executive Committee shall generally oversee the Study consistently with the PSP.

C. The Executive Committee may make recommendations that it deems warranted to the District Engineer on matters that it oversees, including suggestions to avoid potential sources of dispute. The Government in good faith shall consider such recommendations. The Government has the discretion to accept, reject, or modify the Executive Committee's recommendations.

D. The Executive Committee shall appoint representatives to serve on a Study Management Team. The Study Management Team shall keep the Executive Committee informed of the progress of the Study and of significant pending issues and actions, and shall prepare periodic reports on the progress of all work items identified in the PSP.

E. The costs of participation in the Executive Committee (including the cost to serve on the Study Management Team) shall be included in total project costs and cost shared in accordance with the provisions of this Agreement.

ARTICLE V - DISPUTES

As a condition precedent to a party bringing any suit for breach of this Agreement, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to both parties. The parties shall each pay 50 percent of any costs for the services provided by such a third party as such costs are incurred. Such costs shall not be included in Study Costs**.** The existence of a dispute shall not excuse the parties from performance pursuant to this Agreement.

ARTICLE VI - MAINTENANCE OF RECORDS

A. Within 60 days of the effective date of this Agreement, the Government and the Sponsor shall develop procedures for keeping books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement to the extent and in such detail as will properly reflect total Study Costs. These procedures shall incorporate, and apply as appropriate, the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to state and local governments at 32 C.F.R. Section 33.20. The Government and the Sponsor shall maintain such books, records, documents, and other evidence in accordance with these procedures for a minimum of three years after completion of the Study and resolution of all relevant claims arising therefrom. To the extent permitted under applicable Federal laws and regulations, the Government and the Sponsor shall each allow the other to inspect such books, documents, records, and other evidence.

B. In accordance with 31 U.S.C. Section 7503, the Government may conduct audits in addition to any audit that the Sponsor is required to conduct under the Single Audit Act of 1984, 31 U.S.C. Sections 7501-7507. Any such Government audits shall be conducted in accordance with Government Auditing Standards and the cost principles in OMB Circular No. A-87 and other applicable cost principles and regulations. The costs of Government audits shall be included in total Study Costs and shared in accordance with the provisions of this Agreement.

ARTICLE VII - RELATIONSHIP OF PARTIES

The Government and the Sponsor act in independent capacities in the performance of their respective rights and obligations under this Agreement, and neither is to be considered the officer, agent, or employee of the other.

ARTICLE VIII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, nor any resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE IX - FEDERAL AND STATE LAWS

In the exercise of the Sponsor's rights and obligations under this Agreement, the Sponsor agrees to comply with all applicable Federal and State laws and regulations, including Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in 32 C.F.R. Part 195, as well as Army Regulations 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army".

ARTICLE X - TERMINATION OR SUSPENSION

A. This Agreement shall terminate at the conclusion of the Study Period, and neither the Government nor the Sponsor shall have any further obligations hereunder, except as provided in Article III.C.; provided, that prior to such time and upon thirty (30) days written notice, either party may terminate or suspend this Agreement. In addition, the Government shall terminate this Agreement immediately upon any failure of the parties to agree to extend the study under Article II.E. of this agreement, or upon the failure of the sponsor to fulfill its obligation under Article III. of this Agreement. In the event that either party elects to terminate this Agreement, both parties shall conclude their activities relating to the Study and proceed to a final accounting in accordance with Article III.C. and III.D. of this Agreement. Upon termination of this Agreement, all data and information generated as part of the Study shall be made available to both parties.

B. Any termination of this Agreement shall not relieve the parties of liability for any obligations previously incurred, including the costs of closing out or transferring any existing contracts.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, which shall become effective upon the date it is signed by the District Engineer for the U.S. Army Corps of Engineers, New England District.

DEPARTMENT OF THE ARMY	[SPONSOR]
BY_____	BY_____
Brian E. Osterndorf	John F. Cox
Colonel, Corps of Engineers	City Manager
District Engineer	City of Lowell, Massachusetts
New England District	

Attachment 3
MERRIMACK CSO COALITION
MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU) is for the purpose of establishing an organizational structure and management framework for the Merrimack CSO Coalition. This document is effective as of the date last signed below, by and among the members including the City of Manchester NH, the City of Nashua, NH, the City of Lowell, MA, the Greater Lawrence Sanitary District (GLSD), and the City of Haverhill, MA (hereinafter shall be collectively be referred to as the "Coalition");

WHEREAS, pursuant to the authority granted to each member community (hereinafter "coalition member") by a vote of their local legislative body pursuant to the applicable laws, statutes, ordinances and regulations governing the same, and attached as Appendix A of this MOU,

WHEREAS, the Merrimack River and certain tributaries fail to meet water quality standards due to a combination of Combined Sewer Overflow (CSO) discharges, stormwater runoff, erosion and sedimentation, air deposition, and other miscellaneous sources of pollution, and that the signatories to this MOU seek a scientific basis based upon real-time field data and analysis for making investments to improve water quality in these rivers and streams;

WHEREAS, each member community has committed to making a contribution of $210,000, such contribution being conditional upon an agreement between Coalition members and U.S. Environmental Protection Agency (EPA), NH Department of Environmental Services (NHDES) and the MA Department of Environmental Protection (MADEP). This financial contribution is considered as matching funds to the federal appropriation in the control of the Army Corps of Engineers (hereinafter referred to as the “Government”) and to be used for the purpose of conducting an Assessment Study of the Merrimack River (" the study") and the impact of Combined Sewer Overflows (CSO's) and other pollution sources mentioned above on the water quality of the Merrimack River and selected tributaries;

WHEREAS, the purpose of the study is to guide further investments by cities, towns, and state and federal agencies to improve the water quality of the Merrimack River and its tributaries using the most cost effective structural and nonstructural solutions to address pollution from CSO’s and other sources where appropriate;

WHEREAS, the Coalition’s interest is to reopen current consent orders or administrative orders as necessary to provide an opportunity to investigate the optimum ways to significantly improve water quality in the Merrimack River and its tributaries. The Coalition seeks to modify orders into a two-phased approach with targeted investments that yield a high ratio of

environmental improvement for funds expended being made in the first phase and phase two to be informed by the results and recommendations of the study;

WHEREAS, it is understood and agreed that to best manage and oversee the communities' contribution to the Assessment Study and the operations of the Coalition, a form of governance must be established and as such it is the purpose of this MOU to establish the organizational structure for the Coalition.

WHEREAS, it is agreed that the Coalition needs an entity to facilitate and provide day-to-day management of Coalition operations. This entity will work with Coalition members to facilitate interaction and communication with regulatory agencies, elected officials and the public regarding the assessment study.

WHEREAS, the Merrimack River Watershed Council (Hereinafter MRWC), is a 23 year old conservation organization whose mission is…"the protection and restoration of the Merrimack River Watershed for the enjoyment of people, the benefit of its communities, and the health of the ecosystem",

WHEREAS, MRWC and its Service Center has been working with communities, regulatory agencies and others to improve the water quality in these waters, to secure funding for the assessment study, and to create this Coalition;

WHEREAS, MRWC's Board of Directors has provided assistance in this effort and has expressed a further commitment to support this effort;

BE IT RESOLVED, THAT

Coalition Governance:

The Coalition shall be governed by an Executive Committee of senior representatives as appointed by and from each member. Such members will be the mayors/chief executive officer or his/her designee of each member community, and the Chairman of the GLSD of his/her designee. Each representative shall serve as a Trustee (hereinafter "trustees") each having an equal vote as to the policy, direction, negotiation strategy, work scope of the study, cost estimates and financial controls consistent with and subject to the approval by all parties of the signed Feasibility Cost Share Agreement (FCSA) between the City of Lowell on behalf of all Coalition members and the

Government (attached as Appendix B). The Executive Committee will meet regularly at least through the duration of the Study and longer if desired by the Coalition members.

The Trustees shall appoint representatives to serve on a Study Management Team. This Study Management Team shall keep the Executive Committee informed of the progress of the Study and of significant pending issues and actions, and shall prepare periodic reports on the progress of all work items identified in the Project Study Plan (PSP) as defined by the Government and referenced in the FCSA between the Department of the Army and the Sponsor. The Executive Committee may also appoint such other committees as desired to provide assistance to the Coalition, the Government, and to the project.

The Executive Committee, through the Sponsor, may make recommendations that it deems warranted to the Government on matters that it oversees, including suggestions to avoid potential sources of dispute. The Government in good faith shall consider such recommendations.

Management of the Study

Upon approval by the Coalition trustees, The City of Lowell, on behalf of Coalition members, shall execute a FSCA with the Government for the management of the study (See attached Appendix B). It is agreed that the City of Lowell, Massachusetts will serve as the signatory for the agreement for the sole purpose of expediting the executing of the agreement between the Government and the Coalition. It is further agreed that all Coalition members are bound by the FSCA for the assessment study signed by the City of Lowell with the Government. The Government will administer the Coalition's members financial contribution with funding transferred directly to the Government from each member community.

The Trustees shall:

Lowell, as the non-federal sponsor for the Comprehensive Study, will execute the FCSA (Appendix B) with the Government on behalf of the Coalition members.

Oversee the transfer of matching funds of $210,000 per Coalition member community and any other funds subsequently approved by each community to the Government and to MRWC upon agreement and execution of a Sponsorship Agreement attached as Appendix B, and the Agreement with MRWC, attached as Appendix C;

Complete and approve the scope of the comprehensive assessment currently being prepared by the Government. This scope, to the extent the available funding allows, will include data and analysis needed to determine the environmental impacts in the Merrimack River and to assess the relative influence and magnitude of CSO discharges to the River in relation to other pollution sources. The data needs for Total Maximum Daily Load (TMDL) development and stream flow will be taken into consideration in the scope of the project and data from the study will be made available for those purpose.

Receive and approve accounting reports on project financial status from the government and any other entities receiving funds directly from the Coalition or its member communities to support the work of the Coalition.

Initiate the facilitation of a multi-community negotiation with state and federal regulators to be coordinated by MRWC.

Seek financial and regulatory assistance from New Hampshire and Massachusetts agencies, U.S. EPA, and other sources.

Role of the Merrimack River Watershed Council:

The Trustees of the Coalition shall execute an agreement with the Merrimack Watershed Service Center (hereinafter "Service Center"), a division of the Merrimack River Watershed Council (MRWC), to facilitate and provide day-to-day management of the Coalition. (Scope of services outlined herein and attached as Appendix C).

Members of the Coalition agree that MRWC is uniquely qualified for this role with specific expertise in the issues relating to the pollution and river flow of the Merrimack River and its tributaries, connections between states and among key stakeholders throughout the river basin, and has over 23 years of advocacy and research on watershed and water quality issues. The services provided by the Service Center will be coordinated with and complement study-related project management done by the Government under the FCSA agreement.

Members of the Coalition further agree that the Service Center needs to be funded to provide these services desired by the Coalition. Funds to support work of the Service Center will be provided by the Coalition members, and each agrees to pay one-fifth of the costs incurred by MRWC for the services specified in the attached Appendix C narrative and budget. Communities will only provide funds if the Coalition and MRWC together are unable to raise funds from federal and state agencies to support this service. The members of the Coalition agree to assist MRWC in efforts to secure the necessary funds or to provide funds to support these services. Funds provided by the communities to MRWC may be counted against the matching requirement of the Government.

Other Provisions

It is recognized that neither the Coalition nor this MOU affects the responsibility of the Coalition communities for the direction and management of their respective CSO and stormwater programs. It is further agreed that this Agreement may be terminated at the end of any phase of the assessment study or other work of the Coalition with 30 days written notice to all parties. Any termination of this Agreement shall not relieve the parties of liability for any obligations previously incurred including the costs of closing out or transferring any existing contracts.

Recent Army Corps of Engineers policy guidance for the Section 729 authority includes a listing of typical characteristics of watershed plans and assessment processes. The Coalition members need to be aware that the final scope of studies will need to be

approved at Corps Headquarters and will be reviewed for consistency with Corps policy for the program.

IN WITNESS WHEREOF, the Parties hereto have caused this MOU to be executed as of the effective date last written below.

_____	_____
Robert A. Baines, Mayor City of Manchester, NH	Bernard A. Streeter, Mayor City of Nashua, NH
_____	_____
John F. Cox, City Manager City of Lowell, MA	Charles F. Thompson, Chair Greater Lawrence Sanitary District

_____
James Rurak, Mayor
City of Haverhill, MA

Signed this ____day of October, 2001

Attachment 4
AGREEMENT BETWEEN THE MERRIMACK CSO COALITION AND THE MERRIMACK RIVER WATERSHED COUNCIL

This Agreement, effective as of the date last signed below, by and among the following member communities: the City of Manchester, NH, the City of Nashua, NH, the City of Lowell, MA, and Greater Lawrence Sanitary District (GLSD), and the City of Haverhill, MA (hereinafter shall be collectively referred to as the "Merrimack CSO Coalition") and the Merrimack Watershed Service Center, a division of the Merrimack River Watershed Council (MRWC);

WHEREAS, the members of the Merrimack CSO Coalition as listed above, have joined together for the purpose of combining their knowledge, resources and expertise in addressing the pollution issues in the Merrimack River and tributaries according to the requirements of state and federal regulatory agencies;

WHEREAS, the Coalition has been created to strengthen the collective ability to influence regulatory agencies and other governing bodies towards a more creative, comprehensive and effective approach to improving the waters of the Merrimack River Watershed in New Hampshire and Massachusetts;

WHEREAS, in order to effectively carry out this charge, the Coalition has identified the need for an entity to facilitate and provide day-to-day management of the operations of the Coalition, to coordinate communications, coordinate the raising of additional funds to assist communities in the study and implementation of recommended actions, and to act as intermediary with regulatory agencies, members of Congress and others;

WHEREAS, the Merrimack River Watershed Council (MRWC) is a 23 year old conservation organization whose mission is***…"the protection and restoration of the Merrimack River Watershed for the enjoyment of people, the benefit of its communities, and the health of the ecosystem";***

WHEREAS, MRWC has developed its Merrimack Watershed Service Center ("Service Center") for the express purpose of supporting and carrying out data collection, analysis, coordination and other activities that contribute to improvements in environmental quality in the Merrimack River Watershed;

WHEREAS, the MRWC has been working with communities, regulatory agencies and others to improve the water quality in these waters, to secure funding for an assessment study that will guide investments in water quality improvement, and to create this Coalition;

WHEREAS, MRWC is the only private organization concerned solely with protection and sustainable use of the water resources of the Merrimack River Watershed and is committed to working cooperatively with communities and other stakeholders to this end;

BE IT RESOLVED, THAT

The Coalition as described above desires MRWC to provide facilitation and day-to-day management of the work and operations of the Coalition. The following describes the scope of services to be provided by MRWC's Service Center.

Scope of Services
Merrimack Watershed Service Center

I. GENERAL PROVISIONS

1. The tasks provided for in section ___ above and specified in the narrative and cost proposal below will be provided by MRWC staff supported by contractors or consultants as required. Project Manager for this project will be Ralph H. Goodno, MRWC President who will act as day-to-day contact person at MRWC. Support staff will be included as necessary and is included in the attached tasks and budget.
2. The term of this scope is through the Phase I portion of the comprehensive study as defined in the scope and Sponsorship agreement prepared by the Corps and approved by the member communities of the Coalition.
3. MRWC may retain such other assistance as necessary within the scope and budget to assist MRWC and the Coalition to meet common objectives. This may include legal, facilitation or other expertise.
4. MRWC will provide monthly written progress reports and financial/accounting reports to the Coalition as required to insure compliance with Government regulations and reporting requirements in a format as required by members of the Coalition and/or the Government.
5. It is understood that MRWC will provide these services through its Service Center, a division of MRWC. Other MRWC programs or activities are separate and distinct from this effort.
6. MRWC provides these and other services on a fee-for-service basis. It is the intent of the Coalition and its member communities to support MRWC by securing funding to support the provision of these services. MRWC will carry out due diligence to work with communities to secure such funding.
7. All position statements, printed materials and other significant messages or communication prepared by MRWC on behalf of the Coalition will be pre-

approved by the Coalition trustees prior to release. Any information directly related to the assessment study will be approved in advance by the Government.

8. Termination – The parties to this Agreement shall have the right at any time exercisable in their sole discretion by thirty (30) days written notice to the other parties to terminate this Agreement. Upon such termination, the Coalition shall reimburse MRWC for all its legitimate Coalition-approved applicable costs less any amounts already paid to the MRWC.
9. Term of this Agreement – This Agreement will begin on the date of signing of this Agreement by all parties and, unless otherwise terminated as provided above, it will continue through the phase 1 of the comprehensive study as defined by the Army Corps of Engineers project scope and approved by the members of the Coalition. This period is estimated to be 24 months.
10. This contract is established for a period of two years as above, and may be renewed for subsequent periods as desired by the parties by amendment of this Agreement.
11. This Agreement, including the scope of services, may not be amended except by written agreement of the parties.
12. If MRWC uses Subcontractors for any part of the scope of work, MRWC shall furnish the Coalition written notice of its intention to engage Subcontractors, together with all information requested by the Coalition including but not limited to , the responsibility of the proposed Subcontractor in the following areas: (a) any conflicts of interest, and (b) demonstrated qualifications. The Coalition shall have the right to disapprove any proposed Subcontractor for any reasonable cause.
13. No Subcontractor shall have any right against the Coalition or any of its members for labor or services furnished to the MRWC.
14. Nothing in this Agreement shall be interpreted as limiting the rights and obligations of the Coalition or any of its members in their governmental capacity.
15. Conflict of interest: If the performance by MRWC of its services to the Coalition raises questions about conflicts of interest under Mass.G.L. C.268A or N.H. RSA C.____, the Coalition may require he MRWC upon written notice specifying the nature of the conflict to take any action or supply any information necessary to remove such conflict.
16. Recordkeeping and Billing: The MRWC shall prepare and maintain proper, accurate, and complete records of the cost and description of the work that the MRWC has performed which is directly related to the MRWC's scope of services under this Agreement. All such financial records of the MRWC and its subcontractors shall be maintained in accordance with generally accepted accounting procedures and auditing standards. Each month, MRWC shall provide the Coalition with a monthly report of its activities and shall render a billing statement to the Coalition. Each billing statement shall provide a reasonably detailed breakdown of the costs included in that statement. All billing statements shall be subject to audit by the Coalition.

17. MRWC agrees and shall require any Subcontractors to agree not to discriminate in connection with performance of work under this Agreement against any

employee or applicant for employment because of sex, race, religious creed, national origin, handicap, or age.

II. TASKS

The following tasks will be carried out by MRWC for the period of Phase I of the comprehensive assessment study. Tasks 1 & 2 below may be considered as in-kind services provided by communities for the purpose of meeting the match requirement of the Government.

1. Project Management

Related to the assessment study, MRWC will carry out the following organizational tasks:

- Coordinate the establishment and operations of the Coalition and any committees or working groups designated by the Trustees
- Organize meetings including preparing schedule, notices of meetings, meeting notes and follow up activities requested by committees, and documenting actions, recommendations and decisions. Running meetings if desired.
- Coordinating communication among committees
- Preparing meeting agendas in consultation with member communities, the Government, and other parties.
- Coordinate with the Army Corps of Engineers study work, U.S. EPA, NHDES, MADEP including periodic progress meetings. This will include collecting, summarizing and distributing comments and other information relevant to the study.
- Collecting, summarizing and distributing comments on various phases of the comprehensive assessment from the communities to the Corps and others.

These tasks will be coordinated by Ralph Goodno and carried out by MRWC staff and others as necessary.

2. Outreach Plan

- Develop and implement an outreach plan for review and approval by the Coalition and acceptable to the Government. Elements of the plan will include:
- Organize a committee of stakeholders that meets at least two times per year to provide comments on the progress of the assessment study;
- Arrange at least one public meeting in each of three locations in New Hampshire and Massachusetts to inform the public of progress of the study and other work;
- Prepare a quarterly newsletter and progress reports to be incorporated on web sites of communities, MRWC and the Government.
- Prepare and implement a media plan including regular press releases;
- Prepare a periodic presentation to officials in member communities such as a City Council or other group as specified by the Trustees. Such a plan would be presented to the Coalition Trustees for adopting prior to implementation.

- Implementation of the Outreach Plan. MRWC will provide staff and contractor support to carry out the final plan including printing and distribution costs, meeting costs, etc. subject to the budget of the adopted Outreach Plan.

A communications staff member will carry out these tasks with assistance from various contractors and vendors. Ralph Goodno as Project Manager will provide oversight.

3. Funding And Regulatory Matters

Work done by MRWC under this category focuses on communication with regulators and agencies and Congress to secure additional funding or flexibility in regulations to promote the study and its results. These tasks may not qualify as an in-kind match to Government funding.

- Review and reporting of other activities, data, and projects that will assist the Coalition in carrying out the assessment study and recommendations. This would include monitoring activities of other agencies, organizations and municipalities such as the Massachusetts Merrimack Watershed Team.
- Coordinate communications among federal congressional delegation, state legislators and others to maintain and enhance existing support to assist the Coalition assessment study and individual member communities' efforts.
- Organize informational events with congressional offices to secure additional funds for the assessment study and for implementation of water quality improvements related to CSO orders and study recommendations.

Ralph Goodno will coordinate this work with assistance from various staff. It will be coordinated closely with and complement individual efforts of each member of the Coalition.

IV. CHARGEABLE RATES

Hourly rates for this work include Project Manager ($109), Technical support ($62), Communications support ($54), Clerical/assistant ($34), financial management ($51). Other direct costs include mileage, supplies, telephone, printing costs, and other direct measurable costs associated with the assessment study and Coalition operations.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the effective date last written below.

_____ _____

Robert Baines, Mayor
City of Manchester, NH

Bernard Streeter, Mayor
City of Nashua, NH

_____

_____

John F. Cox, City Manager
City of Lowell, MA

Charles F. Thompson, Chair
Greater Lawrence Sanitary District

_____

_____

James Rurak, Mayor
City of Haverhill, MA
Council

Ralph H. Goodno, President
Merrimack River Watershed

Signed this ____day of _____, 2001

MERRIMACK RIVER WATERSHED COUNCIL
COST PROPOSAL FOR PHASE I (24 months)
MERRIMACK CSO COALITION
MERRIMACK COMPREHENSIVE ASSESSMENT PROJECT

PROJECT MANAGEMENT

	Hours	Rate	Total
Project Manager	160	109	17,440
Project Assistant	160	81	12,960
Science/Engineer support	80	62	4,960
Clerical support	240	34	8,160
Bookkeeper	240	51	12, 240
Other Direct Costs			2,000

Project Total
57,760

PUBLIC INVOLVEMENT

Project Manager	40	109	4,360
Project Assistant	62	81	5,022
Communications Manager	314	54	16,956
Clerical support	500	34	17,000
Other direct Costs			7,000

Project Total
50,338

Total In-Kind Qualified Tasks **108,098**
($54,049/year)

FUNDING AND REGULATORY TASKS

	Hours	Rate	Total
Project Manager	160	109	17,440
Communications Manager	160	54	8,640
Clerical support	120	34	4,000
Bookkeeper	50	51	2,550
Consultants			15,000
Other Direct Costs			2,000
Total			**49,630**

APPENDIX J - ATTACHMENT 5

The following is a list of suggested labor categories. Information provided will be used in evaluation of cost reasonableness of the proposal submitted and will not become part of the resultant contract. Contract labor categories and all rates will be negotiated on a individual task order basis.

Category	**Hourly Wage Rate**
Senior Project Manager	
Project Manager	
Assistant Project Manager	
SR Public Affairs Specialist	
Public Affair Specialist	
JR Public Affairs Specialist	
SR Publications Specialist	
Publications Support Specialist	
JR Publications Specialist	
Senior Contract Specialist	
Contract Specialist	
Junior Contract Specialist	
Scheduler/Cost Analyst	
Meeting Facilitator	
Information Management Specialist	
Information Management Tech.	
Senior Computer Modeler	
Computer Modeler	
Junior Computer Modeler	
Senior Aquatic Ecologist	
Aquatic Ecologist	
Junior Aquatic Ecologist	
Senior Wetland Ecologist	
Wetland Ecologist	
Junior Wetland Ecologist	
Senior Ecologist	
Ecologist	
Junior Ecologist	
Biochemist	
Senior Botanist	
Botanist	
Junior Botanist	
Senior Wildlife Biologist	

Wildlife Biologist
Junior Wildlife Biologist
Senior Fishery Biologist

Fishery Biologist
Junior Fishery Biologist

Statistician
Chemical Engineer
Senior Chemist
Chemist
Junior Chemist
Senior Chemical Technician
Chemical Technician
Geochemist
Forestry Specialist
Soil Scientist
Senior Invertebrate Taxonomist
Invertebrate Taxonomist
Junior Invertebrate Taxonomist
Planktonist (Fresh and Salt Water)
Junior Planktonist (Fresh and Salt Water
Senior Economist
Economist
Junior Economist
Senior Air Quality Metorologist
Senior Air Quality Technician
Air Quality Technician
Junior Air Quality Technician
Landscape Architect
Community Planner
GIS Manager
GIS Coordinator
GIS Specialist
GIS Technician
IT/IS Manager
IT/IS Coordinator
IT/IS Systems Software Analyst/Programmer
Remote Sensing Specialist
Senior Geographer/Land Use Planner
Geographer/Land Use Planner
Junior Geographer/Land Use Planner
Senior Hydrogeologist
Hydrogeologist
Junior Hydrogeologist

Senior Civil Engineer _____
Civil Engineer _____
Junior Civil Engineer _____
Senior Environmental Engineer _____
Environmental Engineer _____
Junior Environmental Engineer _____
Senior Geotechnical Engineer _____
Geotechnical Engineer _____
Junior Geotechnical Engineer _____
Electrical Engineer _____
Mechanical Engineer _____
Facilities Engineer _____
Senior Hydraulic Engineer _____
Hydraulic Engineer _____
Junior Hydraulic Engineer _____
Industrial Process Engineer _____
Senior Hydrologist _____
Hydrologist _____
Junior Hydrologist _____
Geological Technician _____
Senior Engineering Technician _____
Engineering Technician _____
Auto Cad Technician _____
Senior Driller Technician _____
Driller Technician _____
Senior Surveyor (Land) _____
Surveyor (Land) _____
Junior Surveyor (Land) _____
Senior Surveyor (Hydrographic) _____
Surveyor (Hydrographic) _____
Junior Surveyor (Hydrographic) _____
Certified Industrial Hygenist _____
Industrial Hygenist _____
Environmental Health Technician _____
Certified Occupational Physician _____
Environmental/Public Health Risk Assessor _____

Certified Health Physicist _____
Senior Archaeologist _____

Archaeologist _____
Junior Archaeologist _____
Underwater Archaeologist _____
Underwater Archaeological Technician _____
Licensed Site Professional _____
Senior Archaeological Technician _____

Archaeological Technician _____
Junior Archaeological Technician _____
Architectural Historian _____
Historical Archaeologist _____
Recreational Specialist _____
Photographer _____
Paleontologist _____
Geomorphologist _____
Editor/Writer _____
Typist _____
Secretary _____
Stenographer _____
Master Diver (SCUBA Certified) _____
Senior Diving (SCUBA) Biologist _____
Diving (SCUBA) Biologist _____
Boat Crew Member _____
Junior Boat Crew Member _____
Boat Operator _____
Laborer _____
Pilot _____
Equipment Operator _____

Equipment Rates

GPS Positioning Equipment Accurate to 10m _____

GPS Positioning Equipment Accurate to 1m _____

GPS Positioning Equipment Accurate to 1 cm _____

Vibracorer _____
Gravity Corer _____
Direct Reading Current Meter _____
Direct Recording Current Meter _____
D.O. Meter/Hydrolab type equip. _____
REMOTS Camera _____
Image Analysis System _____
Range/Azimuth Positioning System _____
Van Used to Haul Equipment and Boat Trailer _____

Sub-Bottom Profiler _____
Sampling Barge w/Heavy Duty Winch _____
Gill Nets-Variable Mesh (50 meters long) _____
Rocking Chair Dredge (clam) _____
Oyster Dredge _____

Fish Sample Otter Trawl Collection and
Analysis (two 15 minute or 1 30 minute tows)

Box Core Grab (0.25m)
Van Veen Grab (0.04s.m)
Smith-McIntyre Grab (0.1m)
Current Meter (General Oceanic Type) (with analysis)

Vehicular Travel
Research Vessel Equippped with
a Radio, Depth finder, Position Indicator,
Diver Ladder (capacity to 200 ft, trawls grabs, ets.)
and all Marine Biological, Chemical, Physical
Sampling Gear and Necessary equipment to
Undertake any Study. (Including jars, buckets, etc.)

Mobilization and Demobilization for above item

Work Boat, Minimum 22 ft.
Mobilization and Demobilization for above item

Work Boat, minimum 16 ft.
Mobilization and Demobilization for above item

Canoe

SideScan Sonar, Magnetometer, Sub-bottom Profiler

Equipment for Core Sampling and Ground Water Monitoring

Equipment for water sampling

Laboratory Analysis Costs

Chemistry - water - BOD
Chemistry - water - bacteria
Chemistry - water - E. coli.
Chemistry - water - fecal coli.
Chemistry -water - total coliform
Chemistry -water - Enterococcus
Chemistry - water - nutrients
Chemistry - water - metals
Chemistry - sediment - Metals
Chemistry - sediment - PCBs cogeners
Chemistry - sediment - PCBs - arochlors
Chemistry - sediment - PAHs
Chemistry - sediment - VOAs
Chemistry- sediment - TPH
Chemistry - sediment - TOC

Chemistry - sediment- water content
Chemistry - sediment- grain size

Overhead Rates (Percentage of Direct labor)

Direct Labor_____%
General and Adminsitrative _____%

*Profit wil be negotiated for each individual task order based upon the type of work and complexity in accordance with FAR Part 15.404-4

NOTE: ALL EQUIPMENT IS TO BE COMPLETE, POWERED, AND READY FOR USE WITHIN 24 HOURS NOTIFICATION OF NEED.

FIELD EQUIPMENT PRICING SHOULD BE BASED ON ACTUAL USE DAYS AND NOT PORT-TO-PORT

TASK ORDER WILL CONSIST OF ANY COMBINATION OF ITEMS DEEMED NECESSARY TO ACCOMPLISH REQUIRED WORK FOR A PARTICULAR PROJECT.

THE GOVERNMENT'S MINIMUM OBLIGATION UNDER THIS CONTRACT IS $40,000.00 FOR THE BASE YEAR AND $20,000.00 FOR EACH ONE YEAR OPTION. THE CONTRACT CEILING INCLUDING
ALL FOUR OPTION YEARS IS $10,000,000.00. TASK ORDER ISSUED SHALL NOT EXCEED THIS MAXIMUM CUMULATIVE AMOUNT.

AT THE OPTION OF THE GOVERNMENT THESE SERVICES MAY BE REQUIRED FOR FOUR ADDITIONAL YEARS IN ONE YEAR PERIODS, (REFER TO SECTION H, SPECIAL CONTRACT REQUIREMENTS, PARAGRAPH H.3).

THE ADDRESS TO WHICH PAYMENT SHOULD BE MAILED, SHOULD BE LISTED BELOW, IF DIFFERENT FROM THAT SHOWN FOR THE BIDDER ON THE FACE OF THE BID.

Attachment 6
Sample Task Order

NONAME RIVER WATERSHED - WATER QUALITY AND ECOLOGICAL

ASSESSMENT STUDY

SCOPE OF WORK

Background:

The Noname River

The river is about 25 miles in length and is located in Massachusetts and New Hampshire. The river has two tributaries to the main stem and one hydropower dam. The lower 0.5 miles of the river is tidal. There are 10 CSO discharges, two WWTP discharges, and an unknown number of storm drains (assume 10 for estimating purposes). There is one USGS gaging station on the main stem. Land use along the river is primarily urban/residential with two older industrial mill cities with combined sewer overflows (CSO's).

The main stem of the Noname River is experiencing water quality problems related to point and non-point source pollutants. Concerns regarding indicator organisms and localized high nutrient concentrations have led regulators to list sections of the River under Section 303(d) of the Federal Clean Water Act as non-compliant with the Massachusetts and New Hampshire water quality standards. Concerns are primarily indicator organisms including *E. coli* and fecal coliforms. Sources of pollutants include tributaries, CSO's, non-CSO stormwater, and illicit discharges to stormdrains.

This task order is designed to support efforts to identify and quantify pollution sources and the impact on water quality, aquatic habitat, and river uses. This task order includes review of available data on the river system, dry weather and wet weather water quality surveys, and collection of data to support river water quality modeling, and development of models to assess the relative contribution of pollutants from various sources and how the river might respond to decreases in loading from the various sources. These model (s) results will be reviewed by regulatory agencies at the state and federal levels and will be used to guide investments in future pollution abatement activities. In addition an ecosystem restoration component is included.

Tasks:

1. Review and Analysis of Existing Noname River Data and Scientific Literature and Data.

Available literature and data on the Noname River will be obtained and reviewed to enhance understanding of the river system in support of the assessment process. This task will serve to identify known or suspected pollutant sources.

2. Current and Potential Future Uses.

Building on work done by others, compile a site-specific list and information on current and potential future public and private uses of the river. Determine which uses the river currently supports and which the river could feasibly support in the future. River uses include, but are not limited to, recreation (primary- swimming and secondary-boating), drinking water supply, and aquatic habitat for fish and wildlife, fish and shellfish consumption, hydropower, and other industrial uses. Develop information showing existing and future use locations, describing types of activities, and identifying water quality/quantity criteria required for these uses to occur. Coordinate this effort with any existing GIS mapping and prepare a GIS map to assess water quality and water quantity requirements to support existing and potential future uses.

3. Field Program.

The purpose of the field data collection program is to better define the existing water quality problems and sources of pollutants to the river. The field program will include collection of hydrologic, water quality, and biological measurements throughout the Noname River. The field program is described below and may be refined by the contractor following completion of the review of existing scientific literature, data, sources of pollution, and meetings with interested parties and the communities.

3.1 Develop Preliminary Quality Assurance Project Plan (QAPPs) for Field Data Collection Program.

The Contractor shall prepare a Preliminary Quality Assurance Project Plan (QAPP) for its efforts. The QAPP shall be reviewed and approved by the US Army Corps of Engineers, NH DES, MA DEP, and US EPA prior to commencement of the field survey.

3.2 Dry Weather Surveys

The Contractor shall perform two intensive dry weather surveys on the Noname River during 2002. Sampling will be performed to document existing conditions and pollutant loads during non-storm conditions. The Contractor will recommend timing of surveys and sampling locations.

The Contractor shall collect streamflow measurements both from the gage station and as described in 3.2.1 below, in-situ water quality measurements, and grab water quality samples for chemical analysis at 10 locations in the Noname. Composite samples from the wastewater

treatment plants discharging to the river shall also be collected and analyzed. Each intensive dry weather survey will include the hydrologic, water quality and biological data collection described below in Sections 3.2.1, 3.2.2, 3.2.3 and 3.2.4. In addition, sediment data collection will be performed during one survey and is described in Section 3.2.5.

3.2.1 Flow Data Collection

Water velocity and streamflow measurements will be collected at two locations during each dry weather survey. The contractor will recommend techniques to be used. Assume the river is about 100 feet wide and 10 feet deep.

3.2.2 Grab Sampling for Laboratory Analysis of Water Quality Parameters.

Grab sampling of river water will be collected for laboratory analysis of *E. coli*, fecal coliform, nutrients, metals (arsenic, cadmium, copper, chromium, lead, mercury, silver, zinc) DO, and BOD. Grab samples will be collected at 10 sampling locations during the field survey. Composite samples from the two wastewater treatment plants discharging to the river shall also be collected and analyzed. In addition, appropriate quality control samples will be collected.

3.2.3 In-Situ Water Quality Sampling.

A suite of in-situ water quality parameter measurements will be collected at selected location (10 minimum). Vertical water quality profile measurements will be collected at all locations where depth is sufficient to allow profiling. Parameters to include DO, temperature, pH, conductivity, and salinity.

The Contractor will deploy one continuous-recording in-situ water quality monitor.

3.2.4 Biologic Data Collection Program: Macroinvertebrate analysis and Bio-assays.

The Contractor shall assess the need for these analyses and at a minimum provide macroinvertbrate sampling at two different spots on the river and (one) Bioassay of a pollutant source.

3.2.5 Sediment Data Collection Program.

The sediment data collection program will support assessment of the impact of sediments on the water quality of the Noname River. Sediment quality will be assessed through analysis of three sediment grab samples. Parameters to include nutrients, metals (16 metals), PCBs, Pesticides, TPH, grain size, and TCLP.

3.3 Wet Weather Surveys

3.3.1 During 2002, the Contractor shall perform one wet weather survey. The Contractor will provide the methodology for conducting this survey for review and approval. Wet-weather

sampling stations will include the 10 river stations, the two tributaries, discharges from the two WWTPS, the 10 CSO's discharges, and 10 storm drains. At a minimum the surveys will be designed to provide quantification of bacterial loading to the river. Parameters to be analyzed include fecal coliform, *E.coli* and *Enterococcus* in the estuary. The Contractor shall include both automated and non-automated sampling as appropriate and describe how this will be done. The Contractor shall also include testing for nutrients and metals (arsenic, cadmium, copper, chromium, lead, mercury, silver, zinc). The contractor will specify the number of samples to be taken at each sampling location to characterize the loading. However, for cost purposes assume one sample every two hours for an eight-hour period.

3.3.2 Water velocity and streamflow measurements will be collected at appropriate locations during each wet weather survey. The contractor will recommend techniques to be used.

4. Main Stem River Modeling.

The Contractor shall perform a water quality modeling evaluation of the Noname River mainstem river. The modeling application will need to be able to quantify the impacts of non-point and point pollution sources on parameters studied. Ability to simulate event specific loading of bacteria and analysis of the transport of this pollutant in the river is critical to the study effort. The models will need to be able to predict the effects of reduced bacteria at specific discharges and at downstream stations.

The model(s) selected will need to able to simulate changes in flows, pollutant loading and river water quality during storm events. Also consider graphical display of results in a manner that clearly illustrates the findings for different alternatives. The model will be used to analyze existing conditions and three alternatives. Although the final model(s) to be applied will be selected by the Contractor in coordination with the Corps project manager and the CSO communities, for cost estimating purposes the contractor should choose an appropriate model assuming that 25 miles of river will be modeled and that good river cross-section data is available.

5. Conduct an Inventory of Ecosystem Restoration Opportunities in the Watershed.

The Contractor shall review existing data, coordinate with watershed stakeholders, and conduct site visits to prepare a list of feasible ecosystem restoration projects in or along the river and selected watershed areas. Projects to be considered include dam removal or constructing fish passages on tributaries for anadromous fish restoration efforts, in-stream fisheries habitat restoration, establishment of riparian buffer strips, establishment of storm water management wetlands or ponds, erosion control projects, and wetland restoration projects along the main stem river. Lake and pond restoration projects will not be included in the study. Provide a list of potential projects and brief description of each project.

6. Hydrology and Hydraulics analysis.

Using USGS records and collected flow data determine the flow distribution along the river for six flow conditions including low flow periods and periods that trigger CSO discharge. This will include an evaluation of the effect of the hydropower dam on river flows. This task shall also describe the methodology that will be used.

7. Data Management/GIS.

The Contractor shall develop a data management/ GIS work plan for the study. Based on this work plan develop mapping, data architecture and a database for this study. The GIS mapping and database will be developed for ArcView. Likely themes will include existing coverages available from EPA, USGS, and New Hampshire and Massachusetts GIS offices, and other planning agencies. New GIS themes will be created for collected data and information on existing and future river uses, storm drains, CSO's, areas served by septic systems and potential ecosystem restoration project location information.

8. Data Analysis and Reporting.

The Contractor shall analyze all data collected as part of the field program described above. A clear and complete report will be submitted containing the following components:

- A review and summary of existing scientific literature and data on the Noname River.
- Documentation of the watershed modeling evaluation including a description of modeling approach, model set-up, critical parameter values, and a clear presentation of results.
- Documentation of the intensive wet and dry weather sampling program including hydrologic, water quality, biological, and sediment characterizations. The report will include data analysis, data presentation, interpretation and recommendations.
- List of information developed for the ecosystem restoration project analysis.

9. Meet with Noname River Interested Parties.

Five (5) meetings shall be held with the Noname River stakeholders and other interested parties to discuss the project. Attendees of the meeting may include, but not be limited to, representatives from the MADEP, NHDES, EPA, CSO community representative and other community representatives, watershed associations, regional planning agencies, natural resource agencies, U.S. Army Corps of Engineers, and municipal wastewater treatment plant representative. The meetings are likely to focus on project kickoff and planning of field program, presentation and discussion of field program results, model development, and modeling results.

Report Submittals:

a) A river assessment report will be prepared that describes and discusses the findings of this task order.

(b) The Contractor will be required to provide 50, 80 and 100 percent report submittals for review and approval by the local sponsors, regulatory agencies, and other stakeholders in the watershed and the Corps.

(c) The Contractor will be required to provide 6 copies of each submittal and 30 copies of the approved final report.

Schedule:

Sampling activities are expected to occur in spring, summer, fall period and modeling to be completed in the winter. The draft report shall be delivered on or before 12 months from notice to proceed. The final report will be due 30 days after receiving and responding to comments.

Contract Administration:

(a) Responsibility for Work. The Contractor shall be responsible for all damages to persons and property, including Government-furnished equipment, which occurs as a result of actions by the Contractor's employees in connection with the prosecution of work. The Contractor shall hold the Government free from claims and suits for damages as the result of this work. The Contractor shall undertake all work following all applicable safety regulations.

(b) Invoices. The Contractor shall submit monthly invoices for work-to-date on this delivery order. Invoices shall reference the Contract Number and Task Order Number. Invoices shall display the service/supply category and its item number, the quantity of units used, the unit price, and the total charge for each category as well as the total invoice amount. The Contractor shall be responsible for the accuracy of invoices. Incorrect invoices may be returned for correction.

(c) Proposals. The proposal submitted by the Contractor in response to this Scope of Work will separately indicate services/supplies cost estimate for each task described in the Scope of Work. The quantity of units used the unit price and total budget for each item shall be detailed.

(d) Release of Data. All data, reports, and materials obtained and/or created as a result of this contract shall become the property of the Government and shall be turned over to the Contracting Officer upon completion of this contract.

(e) Quality Control. The Contractor will be held responsible for the quality of the services provided and for all damages caused the Government as a result of his or her negligence on the performance of any services furnished under the contract.

Although submissions required by this contract are technically reviewed by the Government, it is emphasized that the work must be prosecuted using proper internal controls and review procedures.

(f) M._____(978-318-XXXX) will be the Point of Contact for this delivery order. Routine correspondence on funds and schedules shall be addressed as follows:

Mr. David L. Dulong. P.E.
Chief, Engineering/Planning Division
U.S. Army Corps of Engineers
New England District

696 Virginia Road

Concord, MA 01742-2751

Attachment 7
Water Quality Literature for the Merrimack River Watershed

Early

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Other Data Sources

USGS NAWQA Program/other USGS monitoring
DMF Shellfish Program
Souhegan Watershed Association
-Bacteria data for Merrimack River at Tyngsborough
Gulf Watch (CZM)
-Mussel monitoring
Merrimack College Applied Health Program
- 1997/1998 Wet Weather Bacteria Study
Annual Drinking Water Quality Reports
Monitoring data from MRWC Stream Teams: Cobbler's Brook, Bare Meadow Brook, Stony Brook

Information on data collection programs on the Merrimack River complied by Corps staff. Other programs may exisit that are not included here.

a. Merrimack River Initiative. The Merrimack River Initiative performed dry and wet-weather sampling as part of its bi-state water quality study throughout the watershed. Dry-weather sampling was conducted on 26 August 1994 at 56 stations of which 22 were on the mainstem and 34 were on tributaries. Chronic toxicity testing was conducted with the dry-weather water quality sampling; twenty-two tributary and thirty-one main stem stations were analyzed. Wet weather sampling was conducted on 28 October 1995 during a rainstorm averaging 0.9 inches over the watershed at 10 stations on the mainstem and 10 on the tributaries. Benthic macroinvertebrate sampling was conducted at 44 stations of which 10 are on the mainstem and 34 on the tributaries; samplers were deployed in August 1994 and retrieved 7 weeks later in September. Results are reported in *Merrimack River Bi-State, Water-Quality Report, Part One and Two*, November 1996.

b. NAWQA Study. The National Water Quality Assessment Program (NAWQA) is intended to describe the quality of large, representative parts of the surface and groundwater resources in the U.S. and identify the primary factors that affect their quality. This study includes one site on the Merrimack River, in Lowell below the confluence with the Concord River. Monthly and extreme event sampling began in October 1998. Grab samples are collected and analyzed for temperature, DO, pH, conductivity, nitrogen, phosphorus, some metals, and other parameters. They do not collect bacteria data. Results are reported in the annual water resources data reports for Massachusetts.

c. MADEP. The Massachusetts Department of Environmental Protection (MADEP) has a network of monitoring stations from the mouth of the river in Newburyport to five miles across the border into Nashua, New Hampshire. In the mainstem Merrimack River sub-basin, there are about 48 stations on the Merrimack River itself and 8 stations on tributaries. There were also a dozen WWTP discharges sampled in the early 1980's, but the number of discharges sampled was reduced to 4 by 1990; and there 4 water treatment plant intakes. From the late 1970's through 1990, the MADEP sampled at least some of these stations every year. In 1999 MADEP implemented a five-year rotating basin schedule for watershed assessments. Currently, the

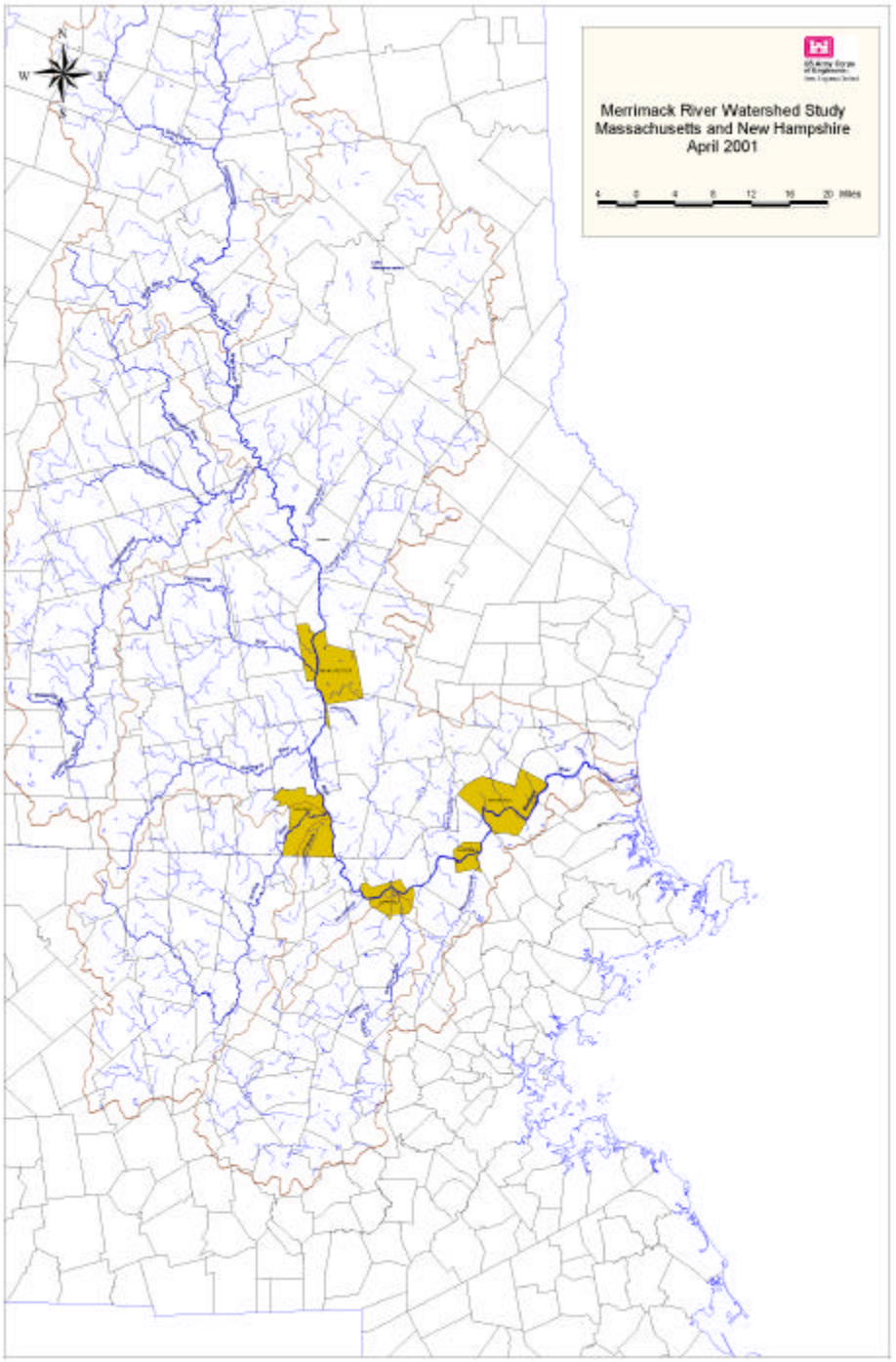
MADEP is funding a research and demonstration project with the USGS to develop a plan for a cooperative state-wide water quality monitoring program.

d. NH DES. In 1989 the NH DES initiated a rotating watershed monitoring program with the intent of sampling each basin at least once every 3 years, with the Merrimack River basin sampled in 1990. Included in this sampling are five National Water quality Surveillance System (NWQSS) and twelve Primary Monitoring Network (PMN) trend stations that are sampled each year. Of these, four are on the Merrimack River mainstem and five are on its tributaries. In 1993 the regular rotating basin sampling program was changed to focus on waterbodies with potential water quality violations, and the Merrimack became the primary focus of sampling for 1999.

e. Water and Wastewater Treatment Facilities. Public water suppliers using the Merrimack River as a source are required to test the intake and instream water quality. These public water suppliers include Lowell, Lawrence, Haverhill, and Methuen. The WWTF's are required to test the outfall, and often do some stream sampling as well. Communities with WWTF's discharging to the Merrimack include Lowell, the Greater Lawrence Sanitary District (GLSD) Haverhill Newburyport, Amesbury, and Salisbury.

f. Massachusetts Division of Marine Fisheries. The Newburyport office collects data on the river to monitor the water quality at shellfish beds. They do not have a regular sampling program, but collect grab samples typically 8 to 12 times per year, which are analyzed for fecal coliforms. They also measure water temperature and salinity. Sampling is performed on an ebb tide just at or after low tide to maximize the freshwater, and is usually initiated by rainfall events, as that is when bacteria counts in the river rise.

g. Other Studies. Various other organizations or individuals have collected data on the river. The Massachusetts Bays Program studied organic loadings from the Merrimack River to Massachusetts Bay. Under this program, five sampling trips were made between April 1992 and May 1993 to collect data at up to 8 stations in the Merrimack River estuary and Massachusetts Bay. Water and sediment samples were analyzed for parameters including PAH's, pesticides, and PCB's. M.M. Studer collected metals data for a Ph.D. thesis at twenty stations on the river between January 1989 and April 1991.


Merrimack River Watershed Study
Massachusetts and New Hampshire
April 2001